Patent Office
The Netherlands

(12) A
Publication

(11)
9002296

(19)
NL

(54)
Method for the inspection of articles registered with a scanner in a self-service store by a client himself and store equipment appropriate for the application of the method.

(51)
Int. Cl.: G07G 1/12, G07F 17/00, G06F 15/24.

(71)
Applicant: Albert Heijn B.V. in Zaandam.

(74)
Agent: ir. Th.A.H.J. Smulders et al.
Vereenigde Octrooibureaux
Nieuwe Parklaan 97
2587 BN The Hague.

(21)
Application No. 9002296

(22)
Filed 22 October 1990

(32)
--

(33)
--

(31)
--

(32)
--

(43)
Published 18 May 1992.

Title: Method for the inspection of articles registered with a scanner in a self-service store by a client himself and store equipment appropriate for the application of the method.

The invention is related to a method for the inspection of articles registered with a scanner in a self-service store by a client himself.

Self-service stores, in which the clients themselves, with the aid of a scanning device, scan a code of every article selected for purchase and register it in the memory of the scanner, are known. At the exit of the store, the memory of the scanning device is then connected to a readout device that reads the codes registered by the client and then produces a receipt. This prevents long waiting times at the cash registers.

Such stores are described for example in the British patent application 2068132 and in the Dutch patent application 8800907.

A problem in the known stores is carrying out an effective inspection of the correctness of the registration. According to the British patent application 2068132, the correctness of the registration is verified by including in the code of each article information about its weight, so that after the codes of all selected articles have been read, the total weight of these articles can be computed.

In addition, a weighing device is present, that weighs the articles that are still in a shopping cart. The weight indicated by the weighing device can then be compared to the calculated total weight.

A disadvantage of this inspection method is that it requires special weighing devices, which are relatively large and expensive. In addition, with such weight inspection no distinction can be made between articles with the same weight but different prices.

According to the Dutch patent application 8800907, inspection of the number of articles is carried out by means of a light barrier above the basket of a shopping cart. In addition, the codes of a number of articles that are still in the shopping

cart are read optically, in a channel, and it is verified whether these codes have indeed been registered correctly.

This inspection method is also rather time-consuming and requires much investment in shopping carts provided with vulnerable light barriers and channels in which the shopping carts can be placed for the inspection of a number of codes.

The object of the invention is to make available a simpler yet effective method for the inspection of articles selected and registered for payment by a client. To this end, according to the invention, a method of the type described above is characterized by the fact that to every client who wishes to use the self-registration system, a customer pass registered in his name is issued; that an inspection parameter is assigned to the customer pass; that after registration by the client of the selected articles, the scanner is connected to a read-out station and that also, by means of the customer pass, the identity of the client and the corresponding inspection parameter are determined; and that with the aid of an automatic device, based on the inspection parameter, it is determined whether inspection should take place.

Store equipment suitable for the application of the method is characterized, according to the invention, by a readout station to read out the articles registered with a scanner; a device for the recognition of a customer pass and means for the automatic determination of a corresponding inspection parameter, where in addition an automatically functioning device is provided, which, dependent upon the determined inspection parameter, emits a signal that indicates whether inspection should take place.

In the following the invention will be described further with reference to the accompanying drawings.

Figure 1 shows schematically an example of store equipment suitable for application of the invention; and

figure 2 illustrates schematically the construction of a scanning device for application with a method according to the

invention.

Figure 1 shows schematically a plan of an example of a self-service store. The store has an entrance 1 and an exit 2. Outside of the store, for example in a parking lot, or in a hall of the store, one can obtain a shopping cart, with which one can walk along the racks 3 in the store to select the desired articles from the available selection and load them in the shopping cart. Finally, one can pay at one of the cash registers of a bank of cash registers 4.

According to the invention, in addition the store is provided with an issuing station for portable scanning devices. The issuing station is shown schematically at 5. The client who wishes to enter the display area of the store with a shopping cart, first has to pass by the issuing station 5 and there, upon presentation of a customer pass, receives a portable scanning device, which is taken into the store by the client.

Every client who wishes to use the self-registration system has to have a customer pass issued in his name, which can have the form of a credit card or the usual bank passes, for example. The customer pass can be verified visually, but is preferably coded electronically and/or magnetically, so that automatic identification is possible. Upon entering the store, upon recognition of a presented pass, preferably automatically, a portable scanning device is released, which the customer can take into the store. If desired, it can also be registered which scanning device is taken by the client identified through the customer pass. The issuing station is preferably provided with a readout device that can automatically read and recognize an electronic and/or magnetic and/or other code of the pass.

It is possible that the customer pass is no longer valid or not suitable for the self-registration system. In that case, no scanning device is released and the client has to make his purchases in the usual manner. The same goes for clients who do not have a customer pass.

The scanning devices comprise at least a scanning head,

which can be brought manually near a code affixed on the articles to read the code, and in addition a memory to store the codes that have been read.

Because bar codes are often used for the coding of store articles, the scanning head will have to be an optical scanner in a practical situation. In principle, however, all other kinds of codes, magnetic codes or binary codes stored in a chip, for example, can also be used with a corresponding scanning device that can detect the codes used and store them in a memory.

Figure 2 schematically shows as an example the construction of an optical scanner that is applicable in the self-registration system according to the invention. The scanner can have the shape of a pistol or the shape of an electric shaver, for example, or another shape that is easy to hold. The housing of the scanner 10 is indicated schematically at 11, and comprises an optical part 12; a device 13, that can convert incident light into electric signals, a CCD array, for example; an analog digital converter 14, that converts the electric signals of the device 13 into binary signals; a decoding device 15, that can decode the article code that has been scanned and converted into binary signals and transfer it to a memory device 16. The memory device 16 can comprise a microprocessor, that can, for example, compute the total price of the selected articles, taking into account any discounts, reduced prices, etc. The scanner can also be provided with an LCD screen 18 on which the type and price of an article whose code has been scanned can be displayed; the total price of the selected articles, and the like.

In addition, an input button 19 and a delete button 20 can be provided to actually store the scanned codes in the memory device or delete the scanned codes, when the article involved is placed back on the rack.

The scanner also comprises a preferably chargeable battery 17, that is charged when the scanner is in the issuing station, in a similar way as the known cordless electric tools.

Preferably the issuing station comprises a closet with a

number of holders for scanners. When a scanner is in a holder, the battery or storage cell of the scanner is connected to a charging device, separately indicated at 7.

According to the invention, while shopping, for every article selected for purchase, the client scans the code affixed to it and then puts the article in the shopping cart.

When the client has collected all the desired articles and scanned their code in this manner, all articles that are in the client's shopping cart have therefore already been registered in the memory of the mobile scanning device.

The bank of cash registers is provided with at least one readout station 6, that can be connected to a scanner through a suitable connector. The readout station automatically reads the information stored in the memory of the scanner and prints a receipt, possibly after a spot check. The client then only has to pay and take the purchased articles away.

The separate manipulation and registration of each article therefore no longer takes place at the cash register, so that the procedure at the cash register, or the readout station, can take place considerably faster than before.

Only for clients who do not use the self-registration system, and possibly in the case of a spot check, the usual procedures at the cash register are needed.

Whether or not a spot check is carried out in a certain situation is determined, according to the invention, by an automatically functioning device. This can be a computer 8, for example, that is part of, or is connected to, the readout station.

Every client who uses the self-registration system for the first time is assigned an inspection parameter. According to an example of execution, this parameter can be a whole number, for example the number 3.

The parameter is written in the customer pass, preferably magnetically or electronically, but it can also be stored in the memory of the computer, with the client's name. In the latter

case the customer pass does not have to be of the (re)codable kind.

When the client, with the registered articles and the scanner, reports to the readout station, the scanner is connected to the readout device and the customer pass is also identified, preferably but not necessarily automatically. In addition the inspection parameter is determined. The parameter is either read directly from the pass by the readout device, or provided by the memory of the computer.

If the inspection parameter is three, for example, a whole number less than three, namely 0, 1, or 2, is determined with the aid of the automatic device, such as for example a random generator. If the whole number thus determined has a predetermined fixed value, 1 for example, a signal is emitted that indicates that an inspection has to be carried out. A client with a parameter of three therefore has a 1 in 3 chance of being inspected.

The number to be determined can also be less than or equal to the inspection parameter. If the number zero is not counted, this gives the same result.

Inspection is effected when every article is registered in the normal manner at the cash register, or scanned by store personnel with a scanner connected to the cash register. The receipt can be produced by the cash register or by the readout station. In any case, only one receipt is produced. However, the cash register is connected to the computer.

In a practical situation, an inspection selection station preceding the readout station can be used advantageously. A client who has used the self-registration system and then wants to leave the store, has to pass by the inspection selection station. Such inspection selection station is shown schematically at 22 in figure 1 and is equipped to identify a customer pass and, based on the inspection parameter corresponding to an identified pass, determine whether or not the client involved should be inspected. If the inspection parameter

is affixed electronically or magnetically on the pass itself, the inspection selection station can be equipped with a random generator, which, based on the value of the value of the inspection parameter read by the inspection selection station, generates a number and then emits a signal that indicates whether or not the client involved should be inspected.

However, the inspection selection station can also only contain a reading device for customer passes and for the rest be connected to a computer that processes the information that has been read, finds the inspection parameter corresponding to the presented pass in the computer memory, and finally provides a signal that indicates whether the client involved should be inspected at that moment.

The inspection selection station is preferably equipped in such a way that a client who has presented a customer pass cannot walk back into the store. To this end, a gate revolving in only one direction or turnstile, for example, can be used.

In addition, the inspection station is equipped in such a way that the client, if inspection must be carried out, is led through an inspection cash register 24 to the readout station. If no inspection should be carried out, the client can proceed directly to the readout station and have the scanner read out automatically, possibly simultaneously presenting the customer pass.

The inspection cash register is connected to the readout station or to the computer connected to the readout station or forming part of the readout station. At the inspection cash register the articles selected by the client are only registered in the usual manner by store personnel, but the receipt is only made in the readout station, after the client has had the scanner read out. In case the client is inspected in this manner, it is also necessary that the readout station identify the customer pass in order to adapt the inspection parameter, if necessary. If there is a discrepancy between the registration of the inspection cash register and the registration of the scanner, a

message can possibly be printed on the receipt.

In order to indicate at the inspection selection station whether the client has to proceed to an inspection cash register, or can proceed directly to the readout station, for example one or more swing gates or turnstiles that can be operated automatically can be used, as indicated schematically at 23.

An inspection cash register is preferably used only for inspection, but can possibly also be equipped to be used both for inspection and for the normal cash register procedures.

If the client has made a mistake when registering, this cannot be seen by the cash register personnel. In the computer, the result of the registration by means of the scanner is compared to that of the inspection. If a discrepancy is found, this can lead to a change of the inspection parameter. For instance, after a discrepancy has been detected one or more times for a certain client during a spot check, the inspection parameter can be lowered from three to two, for example. The new parameter is stored in the computer memory and/or in the customer pass.

If a client with an inspection parameter that is equal to two reports to the readout station, a number less than two is generated with the random generator. The chance that the generated number is equal to a predetermined number, for example one or zero, is now 1 in 2.

A client with a parameter equal to seven therefore has a 1 in 7 chance of being inspected, while a client with a parameter equal to one is always inspected. After a number of inspections, such a client can be requested to return to having the selected articles registered at the cash register in the usual manner.

On the other hand, when it is found that a client makes no mistakes when registering himself, the parameter of that client can be increased, so that the chance for inspection is diminished.

Let it be noted that after the preceding, various modifications are obvious to the expert. It was already

mentioned that the customer card can be an electronically or magnetically coded card. However, the card can also be an optically but invisibly coded card.
Preferably, the card is equipped in such a way that at least part of the information stored in the card can be modified by the readout station. Such cards are known separately and commercially available.

The customer card can also have a payment function, so that automatic payment can take place with the customer card. The customer card can also be connected to a secret PIN code, that has to be keyed in before a scanner is released.

In addition, the computer can be placed either at the location of the readout station or elsewhere. The random generator can be the computer, but can possibly also be a separate device. The inspection parameter can also be determined or modified in a different manner than described in the preceding. For example, a self-learning system could be used for this.

These and similar modifications are considered to be within the scope of the invention.

CLAIMS

1. Method for the inspection of articles registered with a scanner in a self-service store by a client himself, with the characteristic that every client who wants to use the self-registration system is issued a customer pass registered in his name; that an inspection parameter is assigned to the customer pass, that after registration by the client of the selected articles, the scanner is connected to a readout station and that also by means of the customer pass the identity of the client and the corresponding inspection parameter are determined; and that with the aid of an automatic device based on the inspection parameter it is determined whether inspection should take place.

2. Method according to claim 1, with the characteristic that the inspection parameter is a whole number; that with the aid of the automatic device a random whole number not greater than the inspection parameter is generated; and that an inspection is carried out if the generated number is equal to a predetermined number.

3. Method according to claims 1 or 2, with the characteristic that the inspection is carried out by cash register personnel that registers the selected articles in the usual manner, where the result of this registration in the readout device is compared to the result of the registration with the scanner, without the result of that comparison becoming visible to the cash register personnel, and where finally one single receipt is produced.

4. Method according to claim 1, 2, or 3, with the characteristic that the inspection parameter is modified, depending on the result of one or more inspections.

5. Method according to one of the preceding claims, with the characteristic that a scanner is given to a client upon identification by means of a customer pass.

6. Method according to one of the preceding claims, with the characteristic that the customer pass is a card readable without contact.

7. Method according to claim 6, with the characteristic that the information stored in the card is at least partially modifiable.

8. Method according to claim 7, with the characteristic that the inspection parameter is stored in the card or in a computer.

9. Method according to one of the preceding claims, with the characteristic that in an inspection selection station preceding the readout station, the identity of the client and the corresponding inspection parameter is determined by means of the customer pass and subsequently it is determined automatically whether inspection should be carried out; and that if an inspection has to be carried out, the client is led to an inspection cash register, where the articles selected by the client are again registered by store personnel, and where the result of that registration is transferred to the readout station to which the cash register is connected.

10. Store equipment for the application of the method according to one of the preceding claims, characterized by a readout station for the reading of the articles registered with a scanner; a device for the recognition of the customer pass and means for the automatic determination of a corresponding inspection parameter, where in addition an automatically functioning device is provided, which, dependent upon the determined inspection parameter, emits a signal that indicates whether inspection should take place.

11. Store equipment according to claim 10, with the characteristic that the inspection parameter is a whole number; that the automatically functioning device, dependent upon the determined inspection parameter, generates a random whole number not greater than the inspection parameter and emits an inspection signal if the random number is equal to a predetermined number.

12. Store equipment according to claim 10 or 11, characterized by an issuing station for portable scanners, which issuing station is provided with an automatic identification device for the identification of a presented customer pass, and which

issuing station, upon recognition of a customer pass, releases a scanner.

13. Store equipment according to one of the claims 10 through 12, with the characteristic that the readout station is equipped to produce a receipt.

14. Store equipment according to one of the claims 10 through 13, characterized by an inspection selection station, which, by means of the customer pass, determines the identity of the client and the corresponding inspection parameter, and which, based on the inspection parameter, automatically determines whether inspection should take place; and which, in case inspection should take place, leads a client to an inspection cash register.

15. Store equipment according to claim 14, with the characteristic that the inspection selection station, depending on the fact whether or not inspection should take place, releases passage to an inspection cash register or the readout station.

16. Store equipment according to claim 14 or 15, with the characteristic that the inspection cash register is equipped for the usual registration of articles, but directly transfers the result of this registration to the readout station.

17. Store equipment according to one of the claims 10 through 16, with the characteristic that the readout station is equipped to identify a customer pass.

18. Store equipment according to one of the claims 10 through 17, with the characteristic that the automatically functioning device comprises a random generator.

19. Store equipment according to one of the claims 10 through 18, with the characteristic that the automatically functioning device is a computer.

20. Store equipment according to claim 19, with the characteristic that the computer is part of the readout station.

FIG. 1

housing
[left to right]
optics
CCD
A/D impulse
bar code decoder
file
battery

FIG. 2

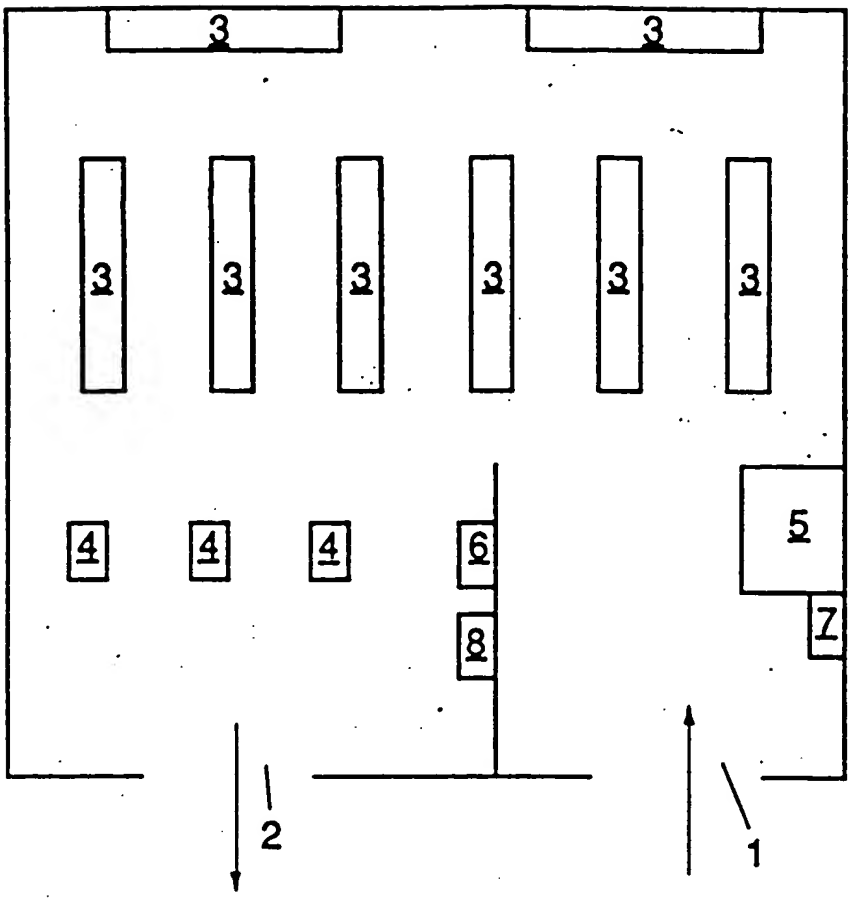
3
3
3
3
3
3
3
3
3
4
4
4
6
5
8
7
2
1

FIG. 1

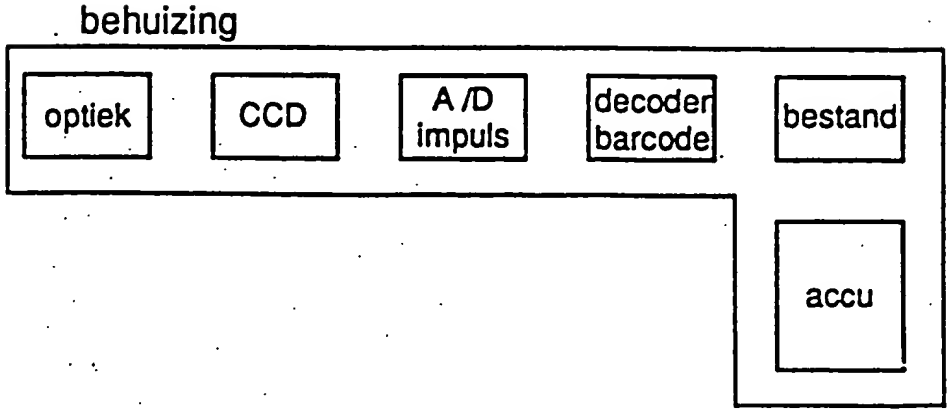
behuizing
optiek
CCD
A /D
impuls
decoder
barcode
bestand
accu

FIG. 2